

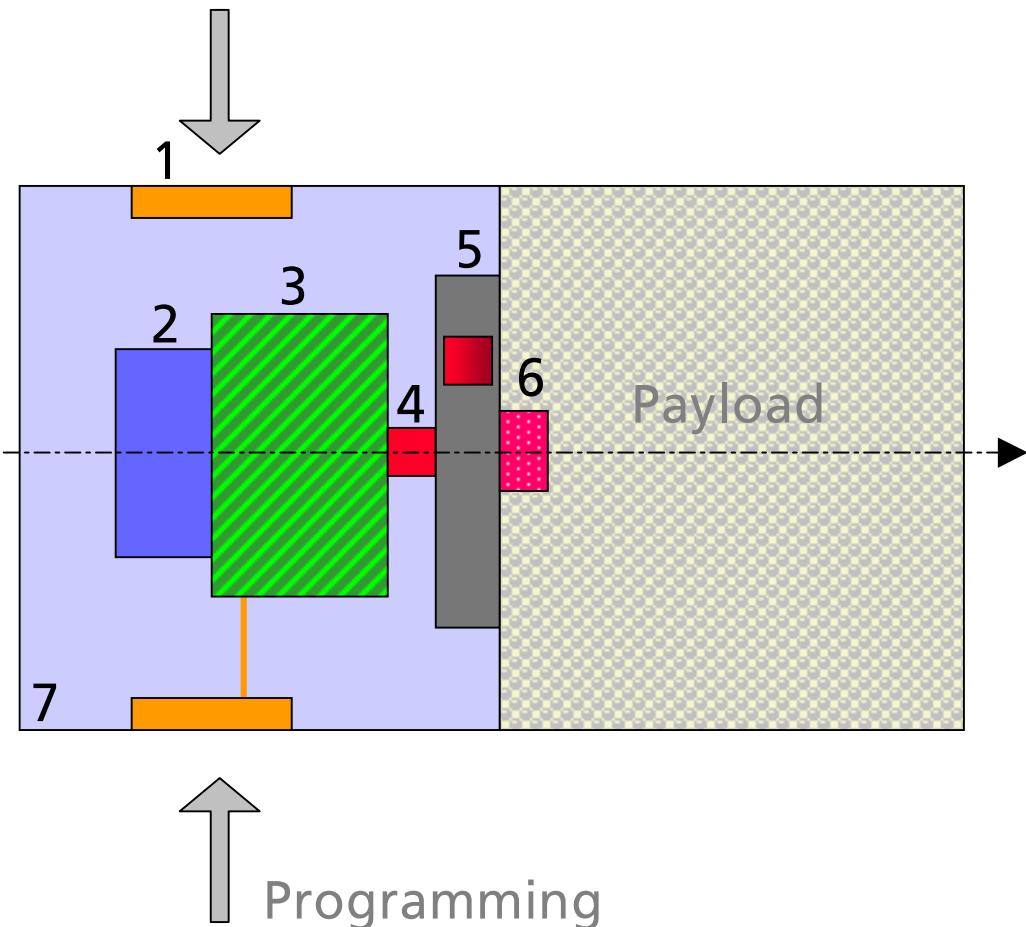
# **Programmable Fuzing for Tube Launched Ammunition**

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**NDIA 35th Annual Gun & Ammunition Symposium  
Williamsburg, VA May 1-4, 2000**

# ABM Fuze Components

ABM Fuze  
Ahead Technology



## Fuze Components:

1 Receiving Coil

2 Setback Generator

3 Electronic Timer  
Module

4 Squib

5 Safe & Arm

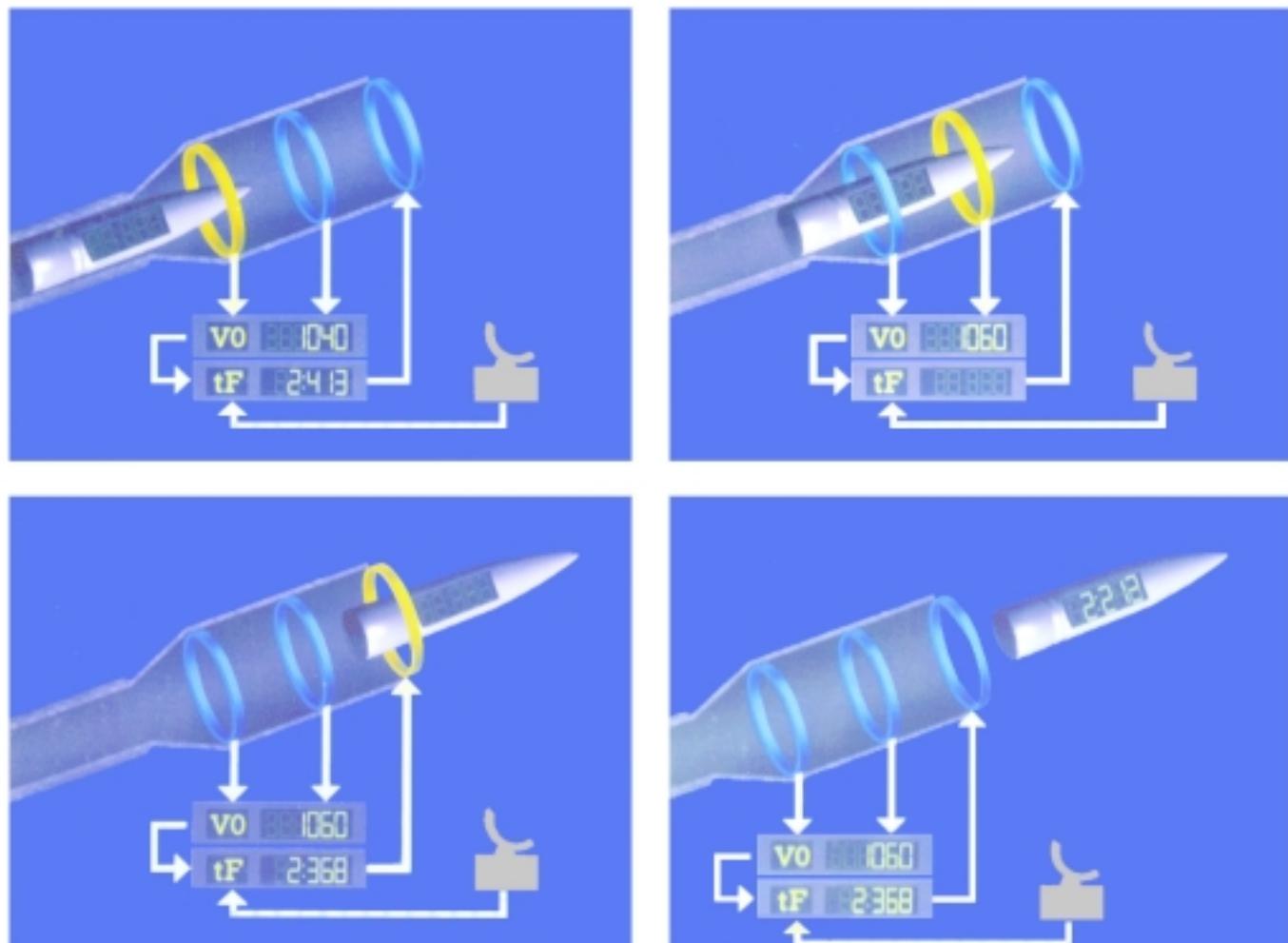
6 Booster, Ejection Charge

7 Base-Fuze Housing



# ABM Programming System

ABM Fuze  
Ahead Technology



F2 15247

# 35 mm ABM: „String of Pearls“

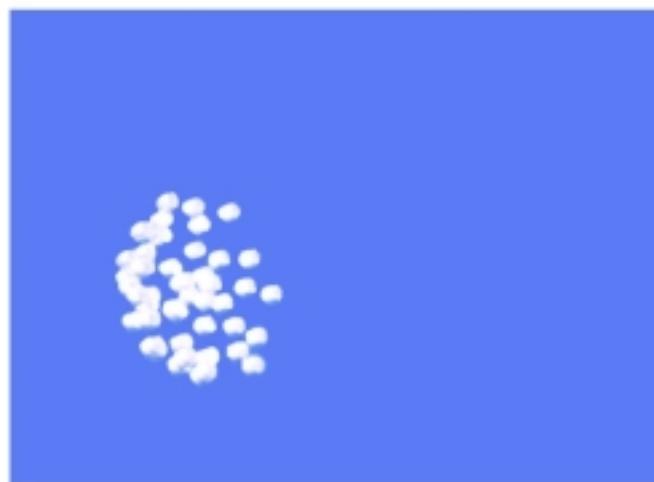
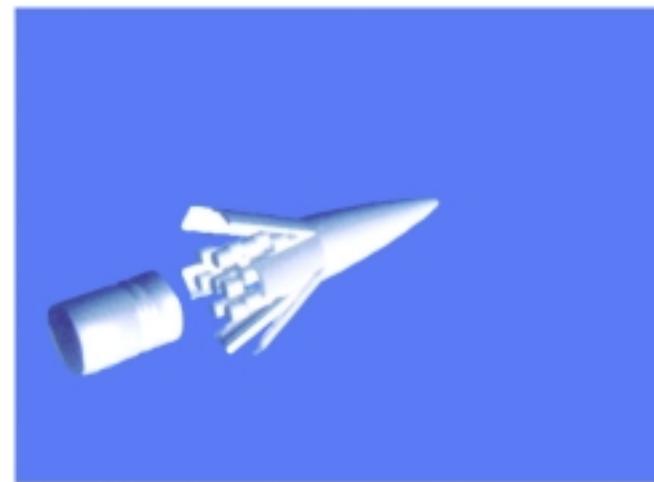
ABM Fuze  
Ahead Technology



- 10 Round Burst at 550 Rds/Min
- Range:  
300 - 1200 m
- Distance between Rounds: 100 m

# ABM Payload Delivery

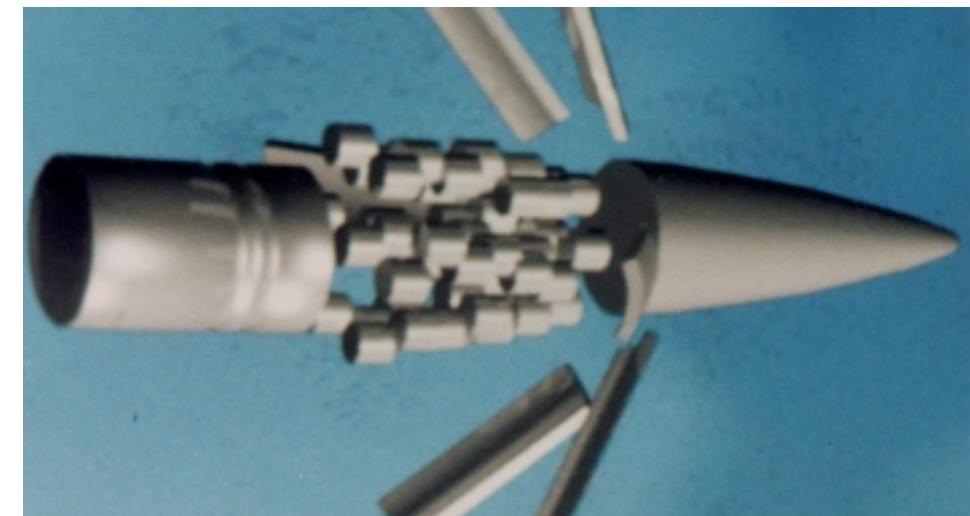
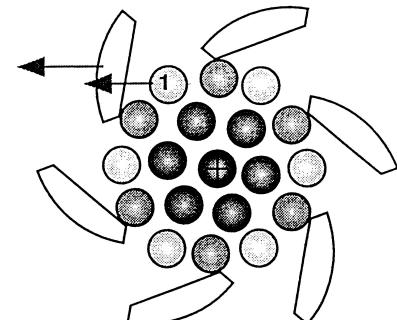
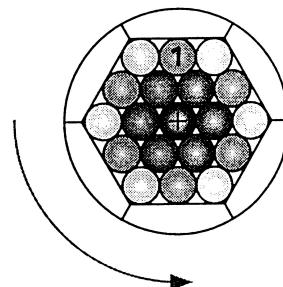
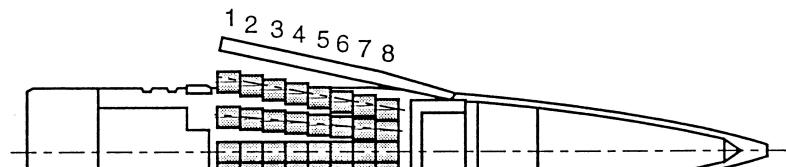
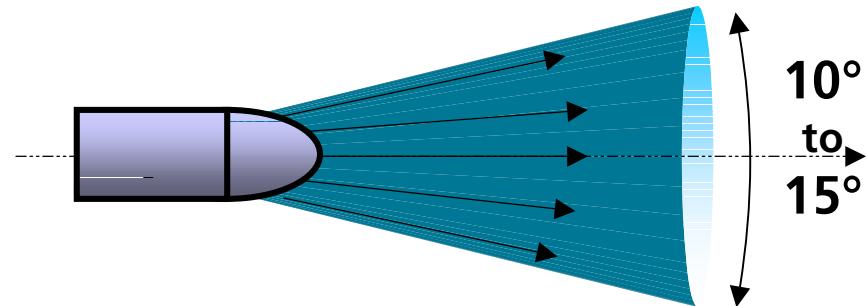
ABM Fuze  
Ahead Technology



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# 35 mm Ahead Payload Ejection

ABM Fuze  
Ahead Technology

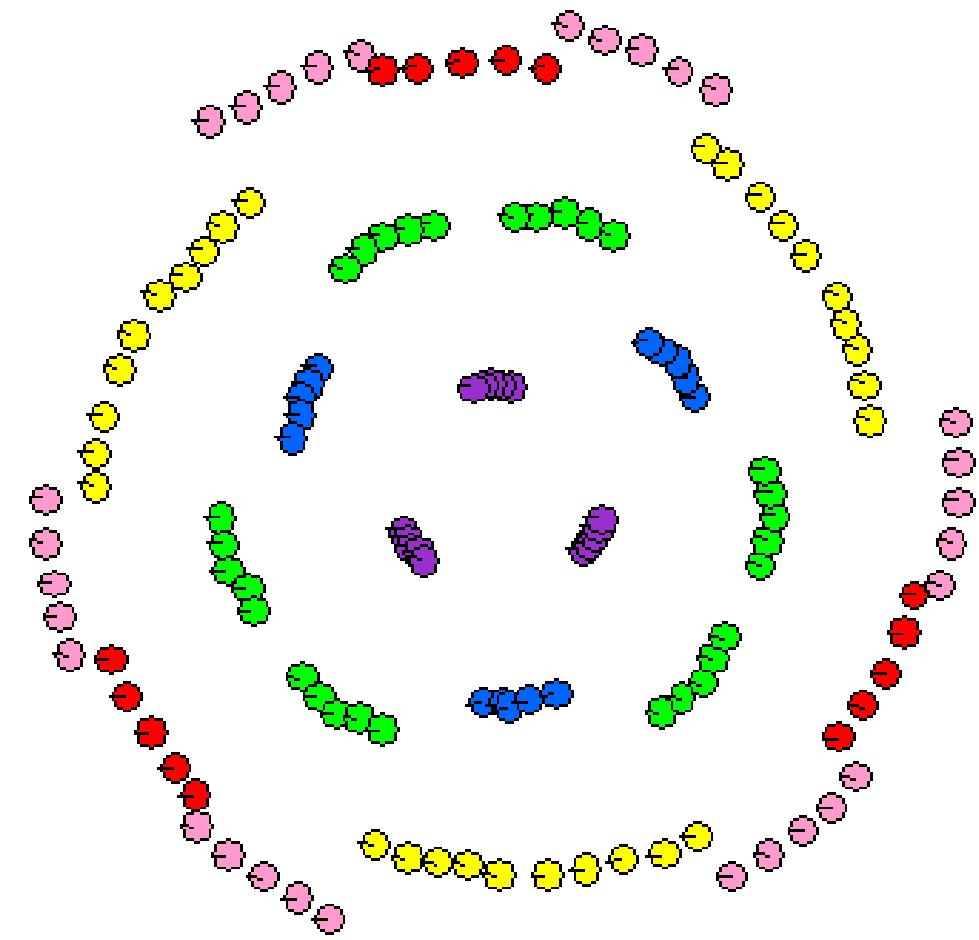
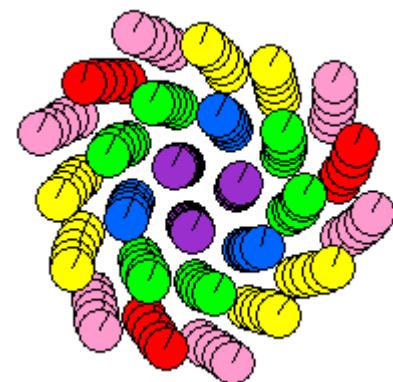
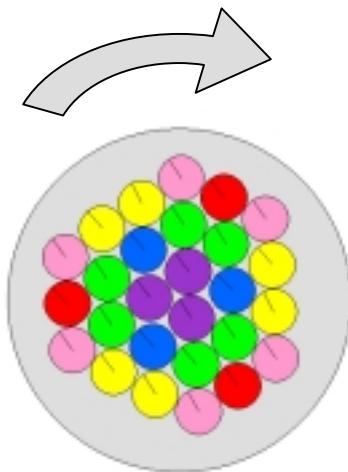


# 30 mm ABM Payload Ejection Dynamics

ABM Fuze  
Ahead Technology

135 Subprojectiles at 1.5 g each

5 Layers at 27 Subprojectiles



Time: 0 μs

100 μs

500 μs

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# Air Burst Munition Family

ABM Fuze  
Ahead Technology

35 mm x 228



30 mm x 173



40 mm x 53



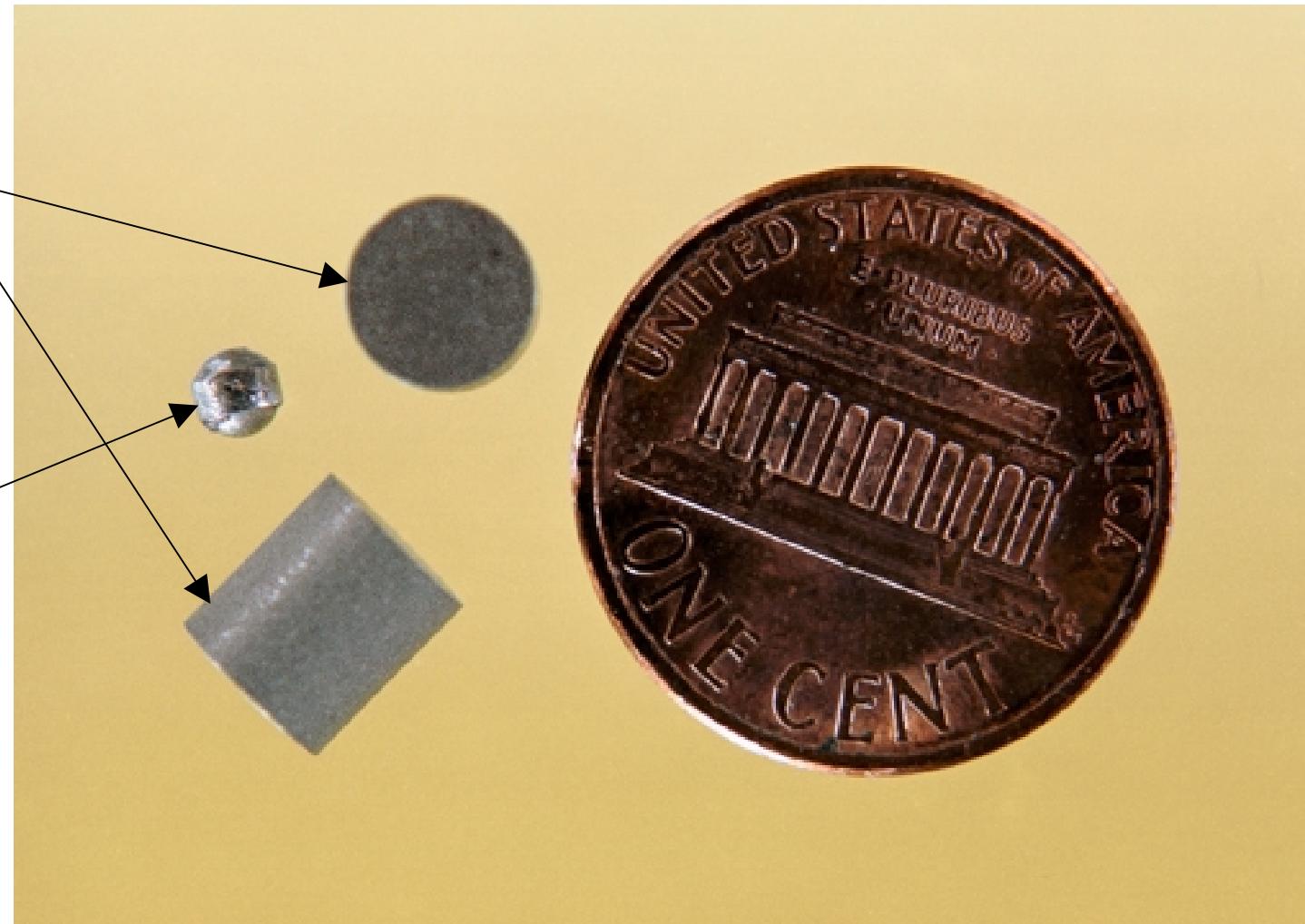
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# ABM: 2 Main Payload Systems

ABM Fuze  
Ahead Technology

Subprojectile  
System  
(Ahead: 3.3 g)

Blast  
Fragmentation  
System (0.2 g)



F2 15249

# 35 mm Ahead Subprojectiles: Simulated Lethality > 2 km Range

ABM Fuze  
Ahead Technology

Target: Maverick Missile

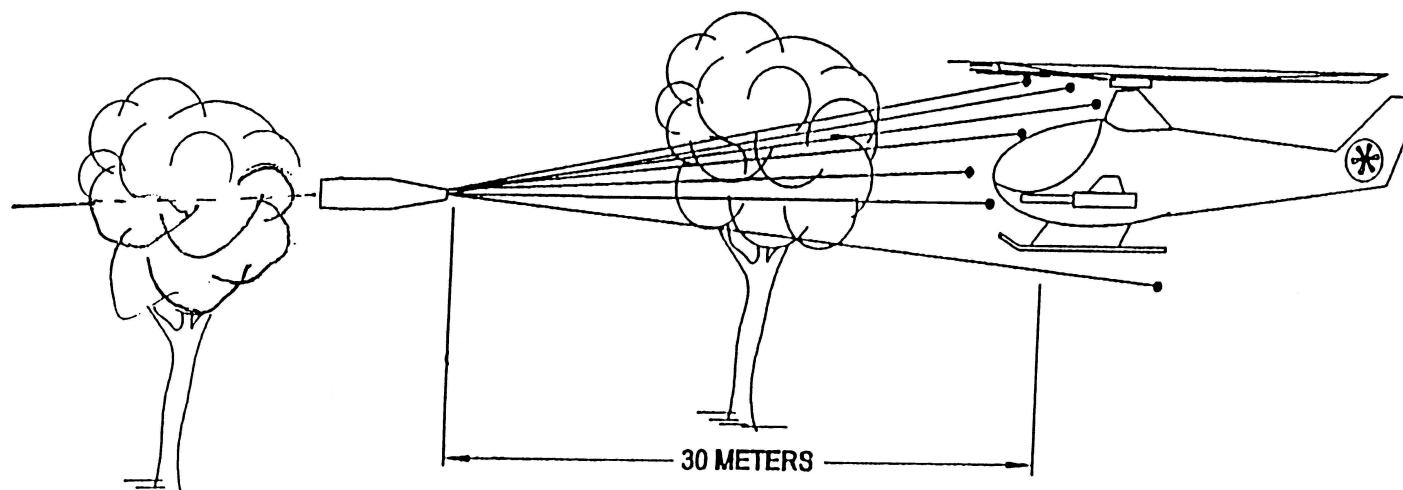


Subprojectile Graze Angle Impact < 10°

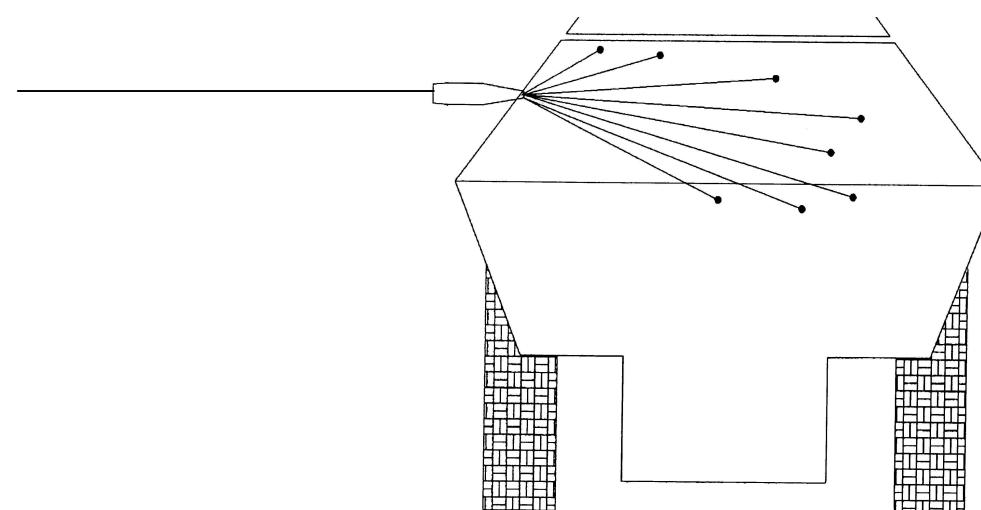
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# 35/30 mm Air Burst Munition with Subprojectiles

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Ahead Technology



- Ideal Anti-Helicopter
- Kills behind tree mask
- Large coverage against Manoeuvres



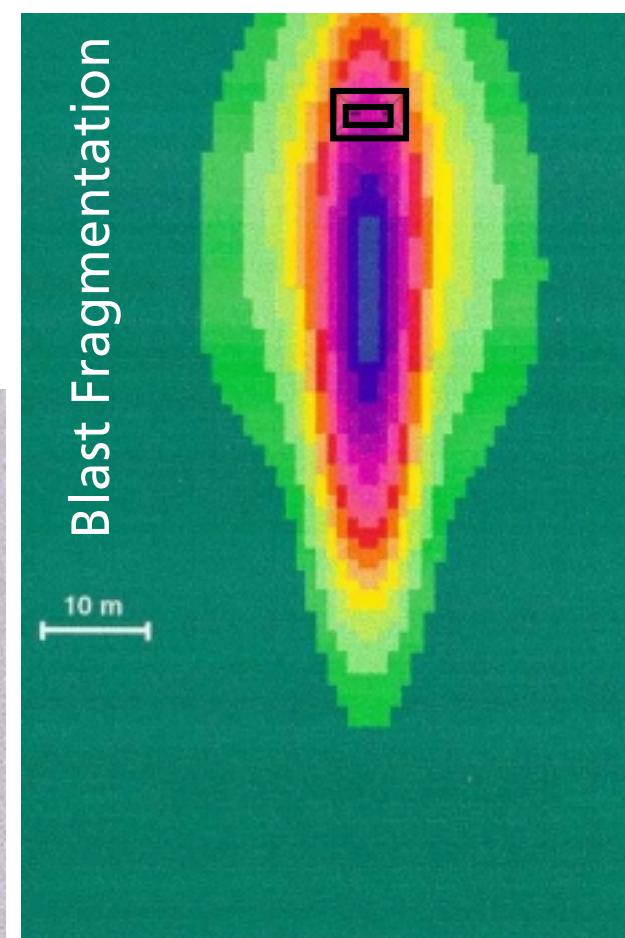
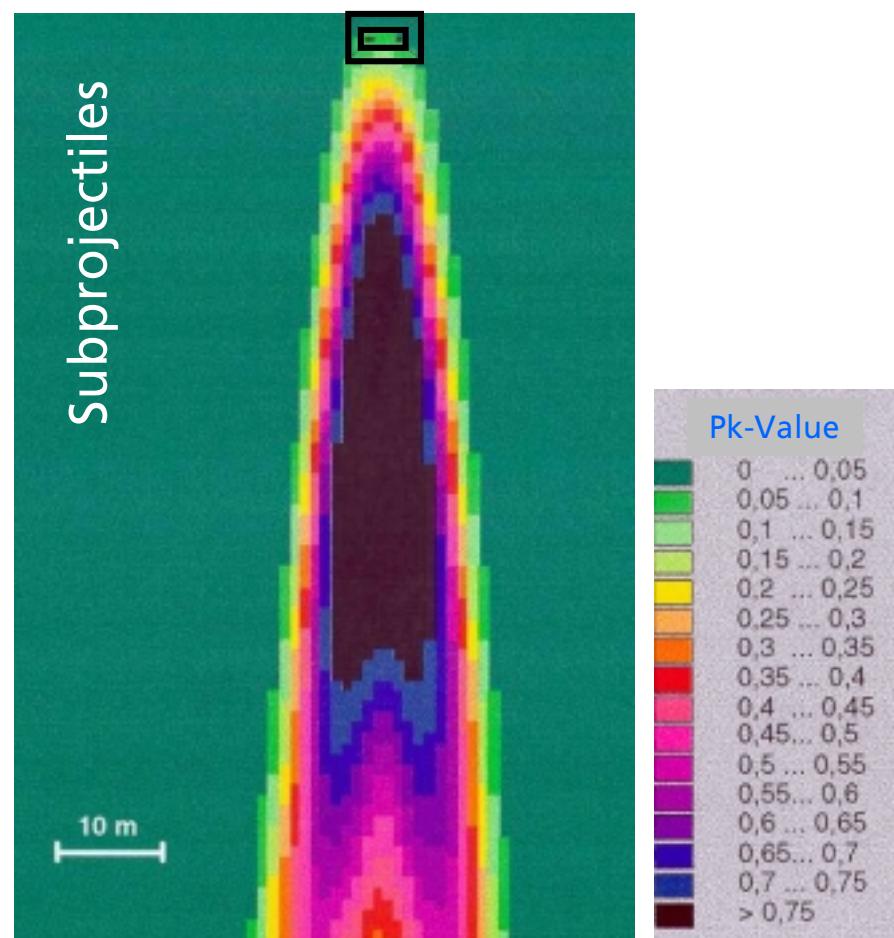
- Fuze inerted
- Penetrates medium armour
- Devastating effects after penetration

F2 15241

# 35mm ABM vs. ATGW Bunker Subprojectiles vs. Blast Fragment.

ABM Fuze  
Ahead Technology

Lethality of a  
3 Rd Burst  
against an  
ATGW Bunker  
at 1500 m



# ABM Fuze (Ahead): Some Specific Features

ABM Fuze  
Ahead Technology

- 1 Total modularity of components: easy manufacturing, testing & assembly
- 3 Autonomous power supply (no battery, no storage problems)
- 4 Allows rapid new fuze developments (recently: 30 mm x 173 & 40 mm x 53)
- 5 Fuze running time temperature compensated
- 6 Each bit programmed with double pulse
- 7 Completeness check on programmed message
- 8 Reliable component functions at very high g launch (> 100'000 g)
- 8 Absolutely ECM safe
- 9 Applicable to all calibers 25 mm upwards, rifled or smooth bore
- 10 High calculated system reliability (> 97%) confirmed by 8 years experience

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# ABM System (Ahead): Some Specific Advantages

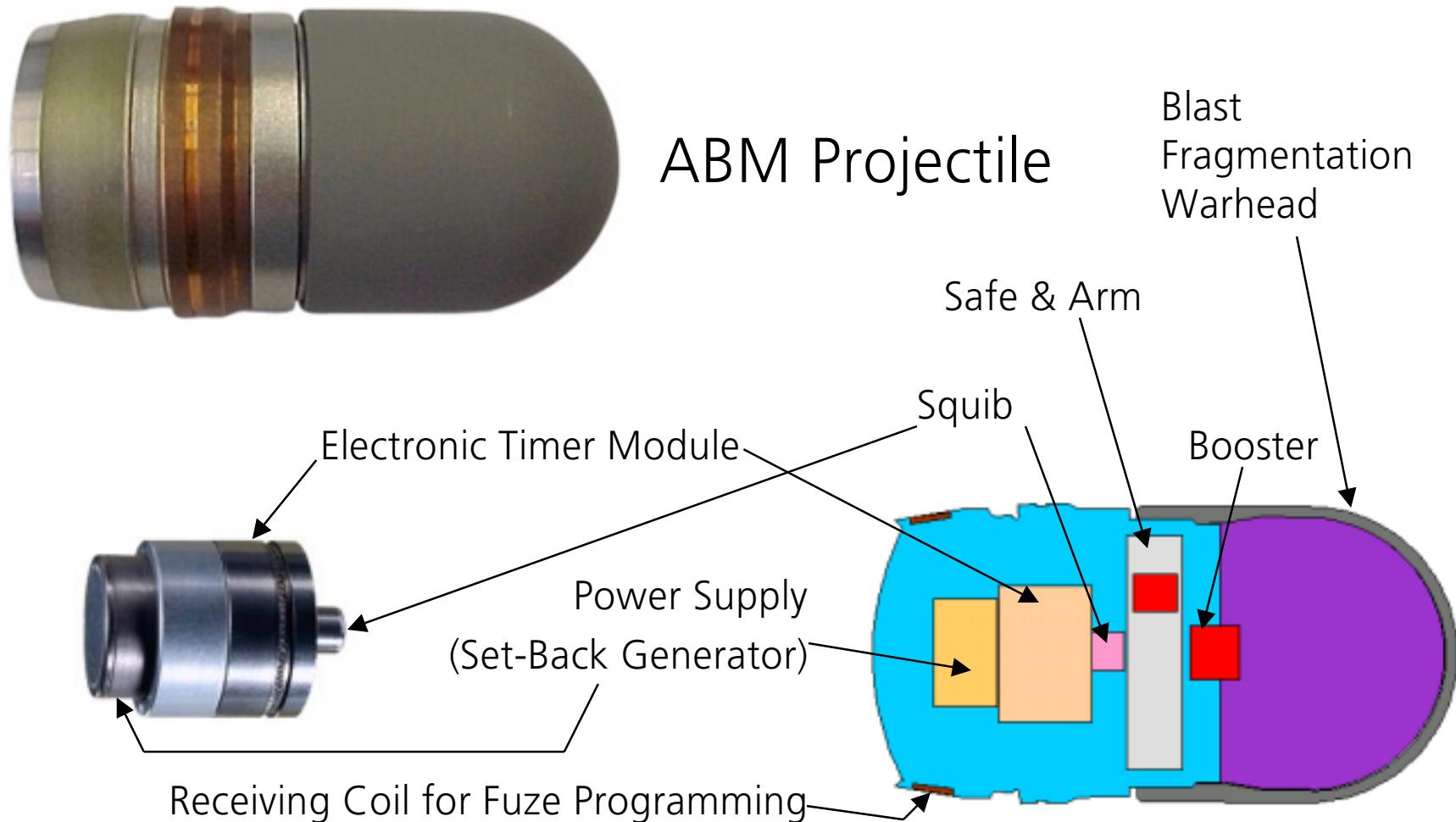
ABM Fuze  
Ahead Technology

- 1 Smart technology simple and safe in use
- 2 No rate of fire limitation due to fuze programming
- 3 Inductive fuze programming at muzzle (not in the gun)
- 4 On-line compensation for muzzle velocity variation
- 5 Easy system upgrade: no weapon modification
- 6 Absolute gun unload safety
- 7 Insensitive to mud, humidity & other environmental factors
- 8 Firing through bushes (impact sensor switched off)
- 9 If no fuze programming required, self-destruct automatically on
- 10 Lethality level of each round adjustable

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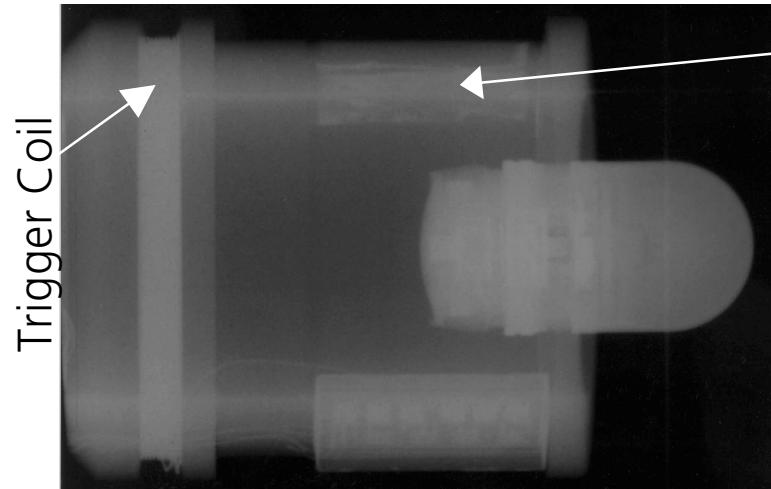
# 40 mm x 53 Air Burst Munition Technology Demonstrator

ABM Fuze  
Ahead Technology



# 40 mm x 53 Air Burst Munition Ammunition Programmer

ABM Fuze  
Ahead Technology



Programming Coil

**Ammunition Programming Phase in  
Ammunition Programmer**

(X-Ray Picture)



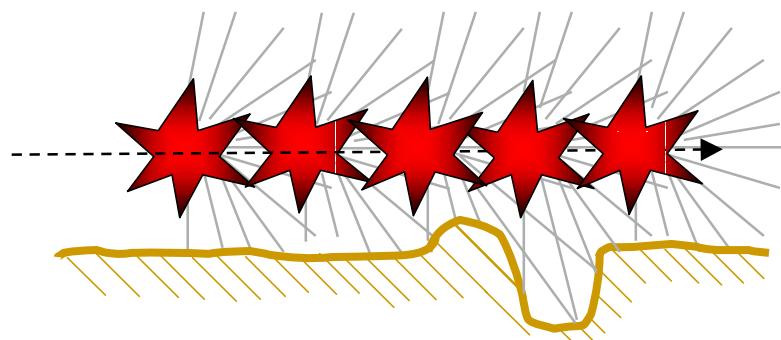
Ammunition Programmer & Projectile  
(Technology Demonstrators)



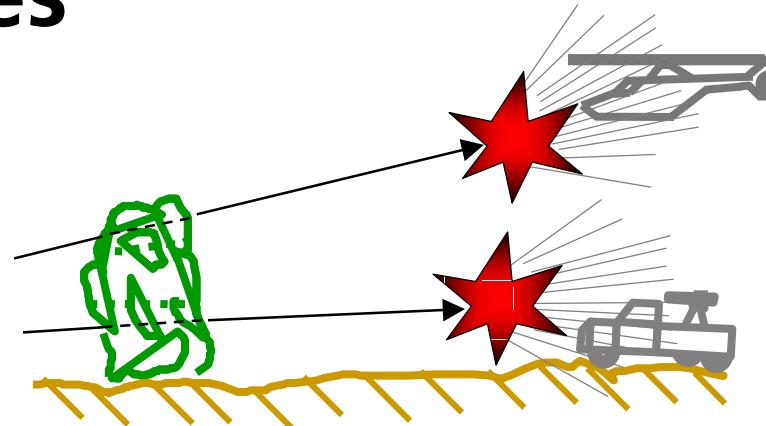
Receiving Coil

# 40 mm x 53 Air Burst Munition Fuze Operation Modes

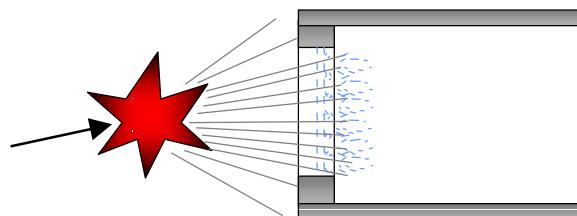
ABM Fuze  
Ahead Technology



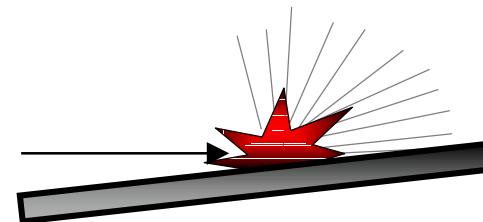
„String of Pearls“



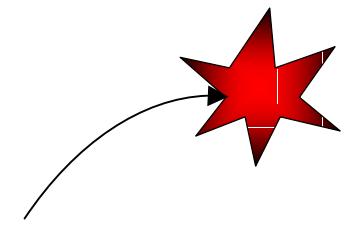
Air Burst w/PD Function Off



Air Burst  
against  
Openings



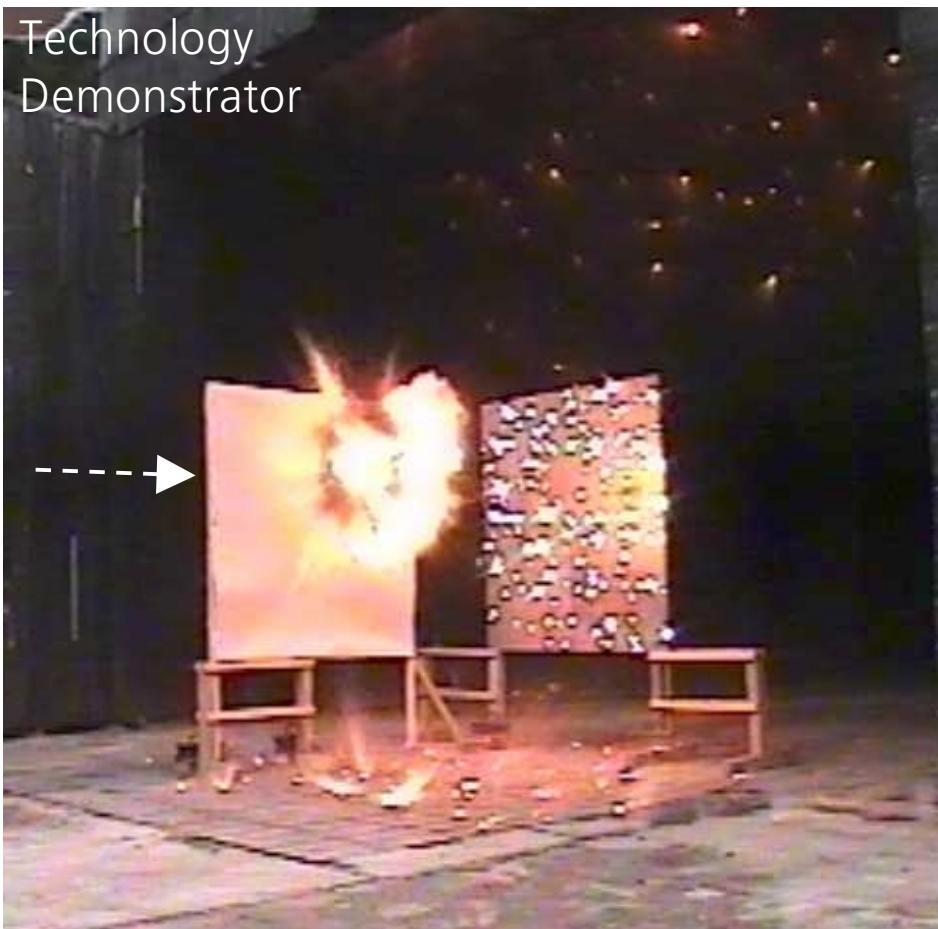
Point Detonating  
PD Function On



Self Destruct  
(No Programming)

# 40 mm x 53 Air Burst Munition Firing Trials

ABM Fuze  
Ahead Technology



Range 200 m



Range 1000 m